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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: P. NENONEN, et al

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For: DIGITAL IMAGING

Group: Not yet assigned

Examiner: Not yet assigned

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

December 22, 2000

Sir:

Prior to examination, please amend the above-identified application as follows.

IN THE SPECIFICATION

Please amend the specification as follows:

Page 22, line 3, delete "What is claimed is:".

IN THE CLAIMS

Page 23, line 1, insert --What is claimed is:--.

Please amend the claims as follows:

10. (Amended) A method according to claim [any of claims] 7, [8 or 9] wherein said step of forming a cumulative inverse histogram comprises the step of:

for each pixel value range, adding to the number of image pixels within that range, modified during said step of developing an inverse histogram, the number of image pixels modified during said step of developing an inverse histogram in all pixel value ranges comprising smaller pixel values than that range.

13. (Amended) A method according to [any preceding] claim 1, wherein said inverse mapping function is scaled to a predetermined maximum value.

14. (Amended) A method according to claim [any of claims] 5 [to 13], wherein said histogram of pixel values is processed to form a modified histogram before said step of developing an inverse histogram.

15. (Amended) A method according to claim [any of claims] 5 [to 14], wherein said inverse histogram is processed to form a modified inverse histogram before said step of forming a cumulative inverse histogram.

16. (Amended) A method according to claim [any of claims] 5 [to 15], wherein said cumulative inverse histogram

is processed to form a modified cumulative inverse histogram before said step of deriving an inverse mapping function.

20. (Amended) A method according to [claims] claim 19, wherein said step of forming a cumulative histogram comprises the step of:

for each pixel value range, adding to the number of image pixels within that range the number of image pixels in al pixel value ranges comprising smaller pixel values than that range.

23. (Amended) A method according to [any of claims] claim 17 [to 22], wherein said histogram of pixel values is processed to form a modified histogram before said step of developing a cumulative histogram.

24. (Amended) A method according to claim [any of claims] 17 [to 23], wherein said cumulative histogram is processed to form a modified cumulative histogram before said step of deriving a mapping function.

25. A method according to claim [any of claims] 17 [to 24], wherein said mapping function is processed to form a

modified mapping function before said step of forming an inverse mapping function.

26. (Amended) A method according to [any preceding] claim 2, wherein said inverse mapping function is modified to form a modified inverse mapping function and said modified inverse mapping function is applied to the set of said image pixels.

27. (Amended) A method according to claim [any of claims] 5 [to 26], wherein said histogram is constructed from all image pixels of said digital image.

28. (Amended) A method according to claim [any of claims] 5 [to 26], wherein said histogram is constructed from a part of all image pixels of said digital image.

29. (Amended) A method according to [any preceding] claim 2, wherein said inverse histogram-based mapping function is applied to the set of said image pixels prior to or after applying another image processing function.

31. (Amended) A method according to [any preceding] claim 2, wherein the inverse histogram-based mapping function

is applied to the set of said image pixels prior to or after applying an edge enhancement function.

32. (Amended) A method according to [any preceding] claim 1, wherein the inverse histogram-based pixel mapping function is applied in an original signal branch and an edge enhancement unit is applied in a branch parallel to the original signal branch.

33. (Amended) A method according to [any preceding] claim 1, wherein the inverse histogram-based mapping function is applied in an original signal branch and in a branch parallel to the original signal branch having an edge enhancement unit.

38. (Amended) An image processor according to claim 36 [or 37], wherein the image processor comprises means for forming a modified inverse histogram from said inverse histogram.

39. (Amended) An image processor according to claim [any of claims] 36 [to 38], wherein the image processor comprises means for forming a modified cumulative inverse histogram form said cumulative inverse histogram.

42. (Amended) An image processor according to claim 40 [or 41], wherein the image processor comprises means for forming a modified cumulative histogram from said cumulative histogram.

43. (Amended) An image processor according to [any of claims] claim 40 [to 42], wherein the image processor comprises means for forming a modified mapping function from said mapping function.

44. (Amended) An image processor according to [any of claims] claim 35 [to 43], wherein the image processor comprises means for forming a modified inverse mapping function from said inverse mapping function.

Please add new claims 50-60 as follows:

-- 50. A method according to claim 8, wherein said step of forming a cumulative inverse histogram comprises the step of:

for each pixel value range, adding to the number of image pixels within that range, modified during said step of developing an inverse histogram, the number of image pixels modified during said step of developing an inverse histogram in all pixel value ranges comprising smaller pixel values than that range.

51. A method according to claim 9, wherein said step of forming a cumulative inverse histogram comprises the step of:

for each pixel value range, adding to the number of image pixels within that range, modified during said step of developing an inverse histogram, the number of image pixels modified during said step of developing an inverse histogram in all pixel value ranges comprising smaller pixel values than that range.

52. A method according to claim 2, wherein said inverse mapping function is scaled to a predetermined maximum value.

53. A method according to claim 2, wherein the inverse histogram-based pixel mapping function is applied in an original signal branch and an edge enhancement unit is applied in a branch parallel to the original signal branch.

54. A method according to claim 2, wherein the inverse histogram-based mapping function is applied in an original signal branch and in a branch parallel to the original signal branch having an edge enhancement unit.

55. An image processor according to claim 37, wherein the image processor comprises means for forming a modified inverse histogram from said inverse histogram.

56. An image processor according to claim 37, wherein the image processor comprises means for forming a modified cumulative inverse histogram form said cumulative inverse histogram.

57. An image processor according to claim 38, wherein the image processor comprises means for forming a modified cumulative inverse histogram form said cumulative inverse histogram.

58. An image processor according to claim 41, wherein the image processor comprises means for forming a modified cumulative histogram from said cumulative histogram.

59. An image processor according to claim 41, wherein the image processor comprises means for forming a modified mapping function from said mapping function.

60. An image processor according to claim 42, wherein the image processor comprises means for forming a modified mapping function from said mapping function.--

REMARKS

Entry of the above amendments prior to examination is respectfully requested.

Please charge any shortage in fees due in connection with the filing of this paper, or credit any overpayment of fees,

to the deposit account of Antonelli, Terry, Stout & Kraus, LLP, Deposit Account No. 01-2135 (367.39427X00).

Respectfully submitted,

ANTONELLI, TERRY, STOUT & KRAUS, LLP

Carl I. Brundidge
Registration No. 29,621

CIB/jdc
(703) 312-6600